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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,331	08/31/2007	Noriya Hayashi	MTU.0022US	5747

21906 7590 10/01/2008
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HOUSTON, TX 77057-2631

EXAMINER

PAK, HANNAH J

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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10/01/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,331	HAYASHI ET AL.	
	Examiner	Art Unit	
	Hannah Pak	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/03/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Double Patenting I

1. Claims 1-3 and 6-11 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5-7, and 14-19 of copending Application No. 10/588,396 (filed on 08/03/2006), hereinafter referred to as “U.S. Appl. '396” (US 2008-0035891) in view of Hayashi et al. (Machine Translation of JP 2003-50295). Although the conflicting claims are not identical, they are not patentably distinct from each other.

Both the instant application and the U.S. Appl. '396 claim a neutron shielding material composition comprising a hydrogenated epoxy compound, a density increasing

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agent, boron compound, filler, and refractory material having at least one of magnesium hydroxide and aluminum hydroxide. Both the instant application and the U.S. Appl. '396 also claim using the neutron shielding material to produce a neutron shielding container (Compare claims 18 and 19 of the U.S. Appl. '396 with claims 10-11 of the instant application). Moreover, the hydrogenated epoxy resin of claim 5, Formulae 2 and 3 and claim 6, Formula 14 in the U.S. Appl. '396 includes the hydrogenated epoxy resin claim 2, Formula 1 and claim 3, Formula 6 in the instant application, respectively. However, the U.S. Appl. '396 does not specify a curing agent as required by claim 1 of the instant application. Hayashi et al. teach employing hardening (curing) agent in the neutron shielding material composition to improve the heat resistance properties and the neutron shield capability of the composition (Paragraph 54). Therefore, one of ordinary skill in the art would have recognized the neutron shielding material composition claimed in the current and co-pending applications are obvious variations of one another.

This is a provisional obviousness-type double patenting rejection.

Double Patenting II

2. Claims 1 and 7-9 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 7-8 and 10 of U.S. Patent No. 7,327,821.

Both the instant application and the patent claim a neutron shield composition comprising neutron shielding material, curing agent, refractory material containing magnesium hydroxide, and a hydrogenated bisphenol epoxy resin. Although both the

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application and patent claim a density increasing agent, the ranges for the agents are overlapping with one another (Compare claim 9 of the instant application and claim 10 of the patent). However, the range recited in claim 10 of the patent encompasses that of claim 9 of the current application. Accordingly, one of ordinary skill in the art would have recognized the neutron shield composition claimed in the current application and the patent is obvious variations of one another.

3. Claims 1 and 7-9 directed to an invention not patentably distinct from claims 1-4, 7-8 and 10 of commonly assigned U.S. Patent No. 7,327,821. Specifically, please refer to the discussion in paragraph 2 above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned U.S. Patent 7,327,821, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon

the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

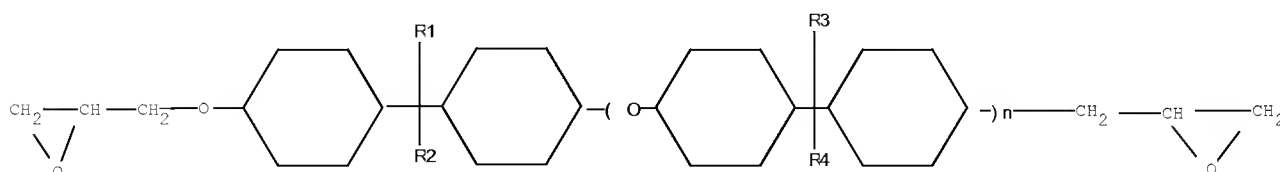
Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. (Machine Translation of JP 2003-50295) in view of Atsumi et al. (Machine Translation of JP 2004-061463) or Anayama et al. (EP 0 628 968) .

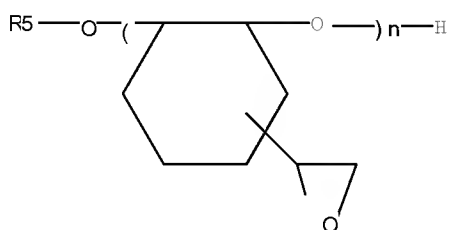
With respect to claims 1-5, Hayashi et al. disclose a neutron shielding material composition useful for cask and container applications, comprising a hydrogenated bisphenol epoxy resin, a boron compound, and a hardening (or curing) agent component having at least one or more ring structures and a plurality of amino groups (Paragraphs 1-2, 9 and 26). Hayashi et al. further disclose the hydrogenated bisphenol epoxy resin having the structural formula:



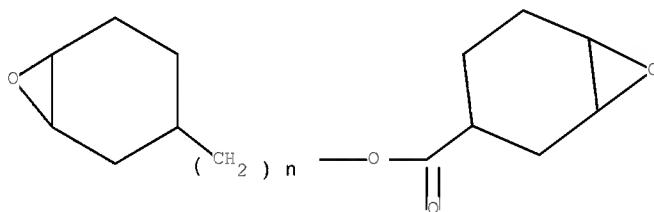
wherein R1-R4 are selected from a group comprising CH₃, H, F, Cl, and Br, and n is from 0 to 2 (Compare Paragraph 8, Formula 9 of Hayashi et al. with claim 2, Formula 1).

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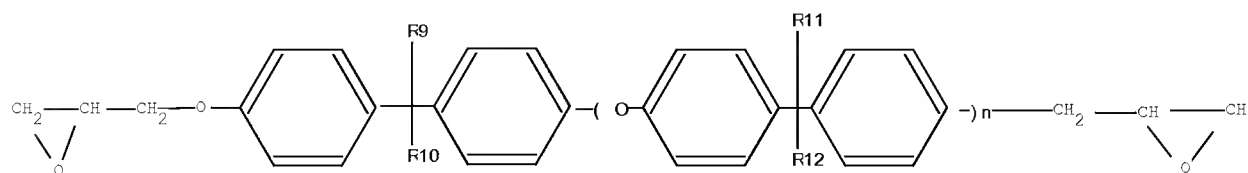
Hayashi et al. also disclose the neutron shielding material composition containing one or more compounds with the following structural formulae **(a-d)**:

(a)

wherein R5 is an alkyl group of 1-10 or H, and n is from 1 to 24 (Compare Paragraph 8, Formula 10 of Hayashi et al. with claim 3, Formula 2).

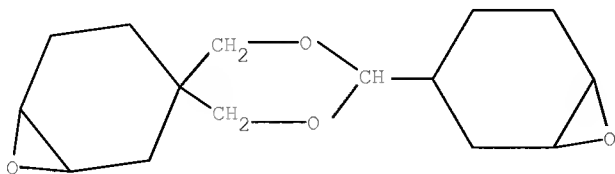
(b)

wherein n is from 1 to 8 (Compare Paragraph 8, Formula 11 of Hayashi et al. with claim 2, Formula 3).

(c)

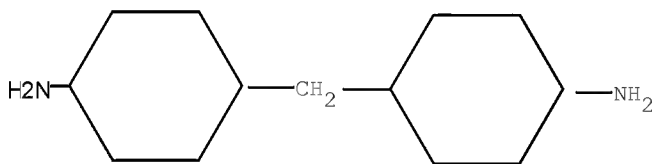
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wherein R⁹-R¹² are independently chosen from the group which consists of CH₃, H, F, C, and Br, and n is from 0 to 2 (Compare Paragraph 8, Formula 12 of Hayashi et al. with claim 2, Formula 6).

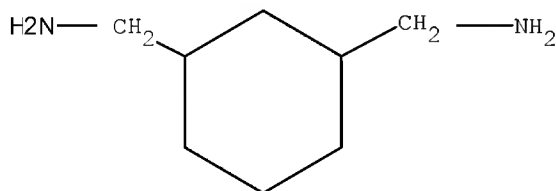
(d)

(Compare Paragraph 8, Formula 13 of Hayashi et al. with claim 2, Formula 9).

Furthermore, Hayashi et al. disclose the hardening (curing) agent component comprising the compound having the structural formula (Compare Paragraph 8, Formula 14 of Hayashi et al. with Claim 4, Formula 4):

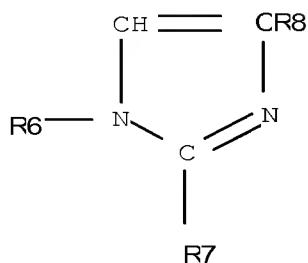


The curing agent component further contains additional compounds having the structural formulae **(a1-b1)**:

(a1)

(Compare Paragraph 8, Formula 15 of Hayashi et al. with Claim 5, Claim 5).

(b1)



wherein R6-R8 each is independently an alkyl group of 1-18, or H (Compare Paragraph 8, Formula 16 of Hayashi et al. with Claim 5, Claim 8):

In addition, Hayashi et al. teach employing fillers and refractory materials having at least one of magnesium hydroxide and aluminum hydroxide as required by claims 6-8 (Paragraphs 28-29).

Hayashi et al. do not specifically mention employing density-increasing agents as required by claims 1 and 9.

However, Atsumi et al. teach employing density-increasing agent comprising metal or metal oxide powders, including Mn, Fe, Cu, Sb, NiO, CuO, and ZnO, in a neutron shielding material composition useful for cask applications (Paragraphs 1-2 and 31-33). Atsumi et al. further teach that by adding an increased density agent, specific gravity of a neutron shield can be raised and a gamma ray can be covered more effectively with also improvement in the fire resistance, thereby enhancing the performance of the neutron shields (Paragraphs 7 and 31).

Anayama et al. also disclose employing high density inorganic materials, corresponding to the claimed density-increasing agent, comprising metal powders, such as W, Mn, Fe, and Mn, in a neutron shielding material composition to obtain a higher and more effective shielding effect on neutron rays (Page 3, lines 5-39). Anayama et al.

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further disclose that the high density inorganic materials will also produce shielding materials having optimum properties, such as greater mechanical strength and heat resistance (Page 10, liens 1-12).

Given the above teachings, it would have been obvious to one of ordinary skill in the art to employ the density-increasing agents taught by Atsumi et al. and Anayama et al. in a neutron shielding composition of Hayashi et al. to obtain optimum shielding materials.

As to claim 9, Hayashi et al., Atsumi et al., and Anayama et al. do not mention the specific density of the density-increasing agent. However, Atsumi et al. disclose the density-increasing agent having metal or metal oxide powders with a preferred density of more than 5.0 g/cm^3 , which overlaps with the claimed range ($5.0 - 22.5 \text{ g/cm}^3$) (Paragraphs 31-32). Moreover, Anayama et al. disclose the high density inorganic material (corresponding to the claimed density-increasing agent) having metal powders with a density of at least 2.0 g/cm^3 or above, which overlaps with the claimed range ($5.0 - 22.5 \text{ g/cm}^3$) (Page 3, lines 15-21). Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the invention was made, since it has been held that choosing the overlapping portion of the ranges taught by Atsumi et al. and Anayama et al., and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *MPEP* § 2144.05: *Overlapping Ranges*.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hannah Pak whose telephone number is (571) 270-5456. The examiner can normally be reached on Monday - alternating Fridays (7:30 am - 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hannah Pak
Examiner
Art Unit 1796

/HP/

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796

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